From The Grassroots Up
A Locally-Developed Surveillance & Case Management Database

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Learning Objectives

- **Data & interface needs for county end-users**

- **Requirements for a collaborative county/state system**

- **NEDSS ideals & PHIN requirements in action**

Topics

- **Multnomah County Communicable Disease Database (MCCDD)**
  - **Background**
  - **Organization & daily use**
  - **Transmission**

- **NEDSS/PHIN compliance issues**

- **Lessons learned**

Disclaimer

The language you are about to hear might be disturbing to those from an IT background…

Need to recognize…

- **Bill Dalbey**
  - **Design & revisions**
- **Jan Poujade**
  - **Vision & contracts**
- **Linda Daniels-Cuevas**
  - **Maintaining (county side) & training**
- **Multnomah County Communicable Disease nurses**
  - **Testing & use**

MCCDD Background

- **Developed by Multnomah County Health Department Communicable Disease program (MCHD-CD)**
  - **Based past experience**

- **Implementation, July 2000**
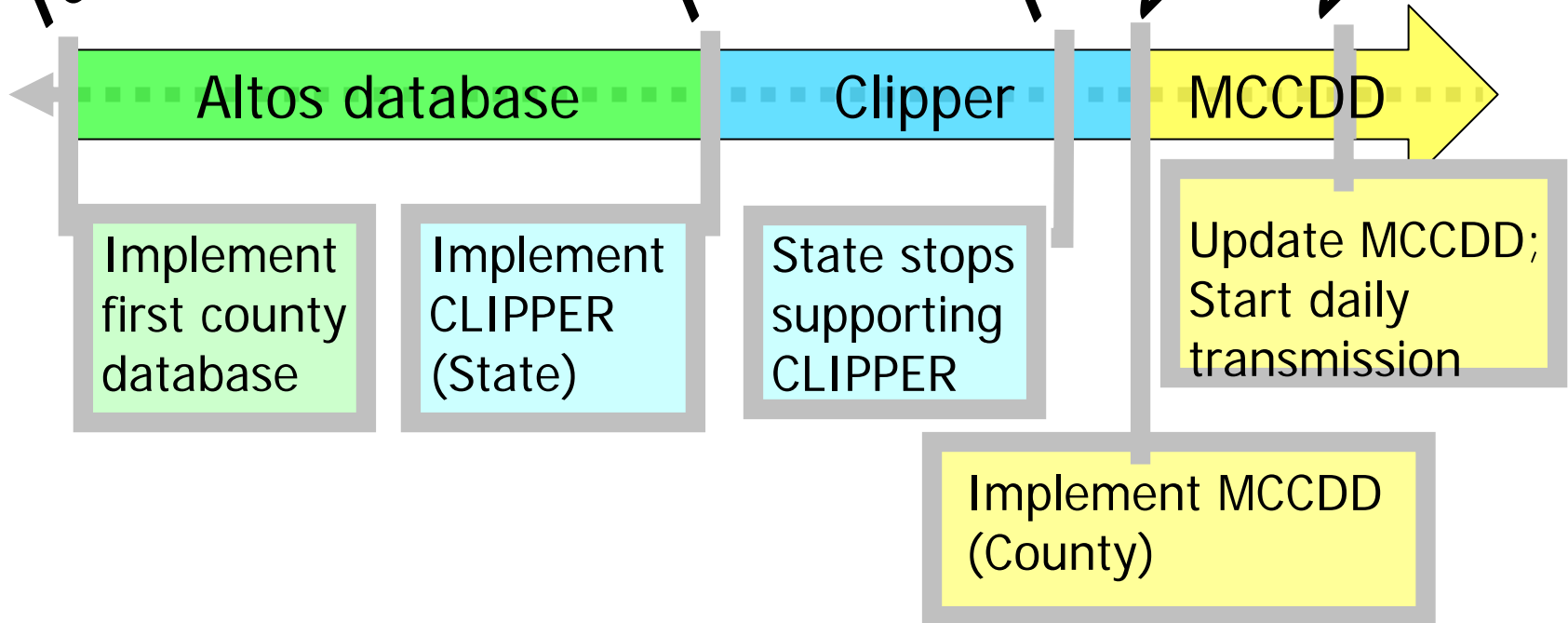
- **Other counties requested; FY2003 first year of contracts**

History

Primary Functions

- **CD nurse case management of reportable conditions**
  - **Cases & outbreak**

- **Local data analysis (disease trends, management issues)**
  - **Epi & managerial**

- **Reporting to state**

Database Facts

- **MS Access™ database**
  - **Over 130 tables**
  - **Easily exportable summary tables**
    - cases & contacts

- **Content: state reporting forms**

- **Lay-out: Case management**

Overarching Layout

- **Initial Menu screen directs users to distinct capabilities**
  - Add/edit case
  - Search for existing case/contact
  - Data analysis & reports
  - Look-up tables & other utilities

Data Entry Screens

- **Cases entered into form groups**
    - **Example groups: Enterics, hepatitis, pertussis**
- **Variable fields for sub-tables based on form group**
    - **Example sub-tables: clinical data, risk factors, contact management**
- **Outbreak investigations elsewhere in database**
    - **Tracts records at event level**
    - **Formatted questionnaires, etc.**
    - **Basic analysis**

Current Status of MCCDD

- **Used by all nurses in MCHD-CD**
  - CD nurses in 13 other counties

- **Information sent to state daily**

- **Improvements & maintenance on-going**

Current Status of SYSTEM

- **MCCDD now integrated into statewide system**

- **System includes**
  - **MCCDD**
  - **Transmission routes**
  - **State Filemaker™ database**

MCCDD Organization

NOTE: This section will be a computer demonstration at conference

Version 03/07/05

Multnomah County Health Department
Communicable Disease Database 2000

User Manual

Current User: Miriam Elman ▼ mhmre

Add/Edit a Case

Reports

Data Analysis

Local Look-up Tables

Outbreak Investigation

Global Look-up Tables

Activate Case Manager

Utilities

Search for a Case:

Last Name ▼
Client Number ▼
Contact Name ▼

Search Mode
◉ Alpha   ○ Soundex

Quick Search (accepts wildcard *)

Lookup Field Last Name ▼
Lookup
Results ▼

Quit

Patient Data

		Case Info

Last Name [   ]

First, ,MI [   ] [ ]

Phone 1 [   ] [H] [▾]

Phone 2 [   ] [▾]

Address [   ]

Zip, County [   ] [▾]

City, State [   ] [▾] [ ]

[↓] CTract [   ] ☒ Homeless

DOB [   ]

Age [0] Sex [▾]

Hispanic [ ] [▾]

☒ White   ☒ Unknown
☒ Black   ☒ Refused
☒ Asian/PI   ☒ Other
☒ AI/AN

Occupation [   ] [▾]

Occ.If Other [   ]

☒ High Risk Occupation

Chart Nbr [   ]

Case Nbr [   ]

[Alternate Contact] [Worksite or School]

DX [ ] [▾] [   ]

Display DX Info

Onset Date [   ] ☒(Unk)
[Date] [Time]

Date Received [05/02/2005] [1:03 PM]

Date Assigned [   ]

Date Initiated [   ]

Date Complete [   ]

☒ Keep Active

OHD DX Status [Suspect] [▾]

EPI Name [   ] [▾]

[🖨] [Print Encounter Form]

[Add Case]

[Find Case]

[Return to Menu]

[Help]

| Source | Clinical | Lab | EPI Links | History/Misc | Risks/Sources | Contact Mgmt | Follow-Up | Treatment | Travel | Notes | for OHD use only |

[Next Tab]

Source:
☒ Lab
☒ HCP
☒ ICP
☒ Other

Permission to contact ☒   OK Date [   ]

HCP Consulted? ☒   Consult Date [   ]

Other Desc [   ]

Source Name [   ] [▾]

Source Phone [   ]

Date of Report [   ]

Primary HCP [   ] [▾]

HCP Phone [   ]

Enter HCP using format of: Last Name, Comma, Space, First Name

"Smith, Jane"

Orig. Sent to OHD [   ]

Resent to OHD [   ]

Sent as Confirmed [   ]

Sent after Complete [   ]

Created [05/02/2005] Created by [   ] Updated [   ] Updated by [   ] Completed by [   ]

Record: [◄◄] [◄] [16977] [►] [►►] [►*] of 16977

Enter patient's last name, if known.

| Source | Clinical | Lab | EPI Links | History/Misc | Risks/Sources | Contact Mgmt | Follow-Up | Treatment | Travel | Notes |

Enterics

? ▦ Lab Confirmed

O & P RESULTS

▦ Cysts
▦ Trophozoites
▦ unk
▦ EIA Positive

Isolate submitted to PHL   [▼]   Next Tab

PHL Specimen Nbr [   ]

Accession Nbr [   ]

SubType [▼]

Name of Lab [▼]

Specimen [▼]

Date of Specimen [   ]

Nbr of Specimens Examined [   ]

Notes [   ]

Specimen	Date	Lab Name	Lab Type	Lab Test Type	Test Results	PHL #	Accession Nbr
[▼]		[▼]	[▼]	[▼]			

| Source | Clinical | Lab | EPI Links | History/Misc | Risks/Sources | Contact Mgmt | Follow-Up | Treatment | Travel | Notes |

During the exposure period, was the patient ...

Associated with a known outbreak?

Close contact of a confirmed case?

Has the case been reported?

Nature of Contact:

Outbreak Name

Primary_Secondary Case Numbers

Case Nbr	Link Type

Record: |◄ ◄ | 1 | ► ►| ◄ ► |

Notes:

Next Tab

▨ Is patient aware of anyone else with similar signs and/or symptoms? If so, put details in notes section.

| Source | Clinical | Lab | EPI Links | History/Misc | Risks/Sources | Contact Mgmt | Follow-Up | Treatment | Travel | Notes |

Last Name	First Name	DOB	Age	Date Contacted /Time	Sick?	Onset Date	Prophylaxis	Prophy Status
			0					Recommended

Relation to Case

Occupation

Comments

Date Recommended

☒ **High Risk**

Followup Form

Diarrhea?

Info/Education Provided

Sick?

Given

Date Given

Record: ◄◄ ◄ 1 ► ►► ►* of 1

Multnomah County Health Department
Communicable Disease Database

User Manual

Select an Existing Query

Select tables to copy to private database

AGE TYPE
Alt Contact Type Table
ArchiveTest
AuditRecord
CaseChanges
CaseChangesTemplate
CaseData
CaseDataSymptoms
CaseDefinitionFullOutbreak
CaseDefinitionSummaryOutbreak
CDC Required Treatment Table
CensusTractLookup
CityStateZip Table
Contact Exposure Type Table

Copy Files

Exit

Graph Cases by Month

Graph Cases by Year

Graph Cases by Zipcode

Case Statistics by Risk Factor

Multnomah County Health Department

Communicable Disease Database

REPORT MENU

Click on the desired report, fill in additional information if requested, and click on the "Run Report" button.

- Cases- by EPI
- Cases- by Diagnosis
- Cases- by Last Name
- Case Counts by ZipCode
- Cases by Census Tract
- Disease Summary by Month
- Hep Prophylaxis Report
- Duplicate Cases Report
- Assurance Reports

Run Report   Exit

Version 03/07/05

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Communicable Disease Database 2000

Current User: Miriam Elman ▼   mhmre

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Data Analysis	Local Look-up Tables
Outbreak Investigation	Global Look-up Tables
Activate Case Manager	Utilities

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Last Name ▼

Client Number ▼

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Quick Search (accepts wildcard *)

Lookup Field Last Name ▼

Lookup

Results ▼

Quit

Multnomah County Health Department
Communicable Disease Database

Setup Outbreak Questionnaire	2X2 Analysis	EPI Curve Interval
Enter Questionnaire Data	EPI Curve	● 1 hour
Questionnaire Listing	Frequency Reports	○ 2 hours
Outbreak Summary	Incubation Curve	○ 4 hours
		○ 8 hours
Edit Outbreak Default Questions/Symptoms	Export to EPI-Info	○ 12 hours
	Export to DBF	○ 24 hours

Select Incident ID

Exit

| Incident Description | | Lookup by Incident Name | | New Outbreak | Line Listing | Outbreak Summary | EPI Curve | Export to DBF | Exit |

Incident Description [_____]
Incident Date/Time [_____]

Lookup by Incident Name
[_____ ▼]

| New Outbreak | Line Listing | Outbreak Summary | EPI Curve | Export to DBF | Exit |

Outbreak Type [____ ▼]

Lookup by OHS Outbreak Number
[_____ ▼]

Period in hours [8 ▼]

OHS Outbreak Nbr [_____]

Investigating EPI [_____ ▼]

Incident ID

Create/View Case Definition

Institution Name [_____]

[0]

Institution Type [_____]

Name	Class	Sex	Age	Fever	Vomiting	Diarrhea	>2 loose stools in 24 hrs	Bloody stools	Onset Date/Time	Duration (hours)	Incubation (hours)	Case	Sought Medical Attention	Admitted to Hospital
				☐	☐	☐	☐	☐			0	☐	☐	☐

Comments [_____]

Multnomah County Health Department
Communicable Disease Database

LOCAL TABLE MAINTENANCE MENU

EPI Table

Hospital & Lab Tables

Report Source & Primary HCP Tables

Help Text Setup

System Setup Parameters

Query Maintenance

Exit

Multnomah County Health Department
Communicable Disease Database

UTILITY MENU

Click on the desired option, fill in additional information if requested, and click on the OK button.

Health Division Only

Export to Filemaker

Load Case Data

Load Outbreak Data

View New Cases

Master Site Only

Export Lookup Tables

Export Case Data-Old Version

Local Health Department

Export Case Data

Export Outbreak Data

View Error Log

Load Lookup Tables

Create Audit File

OK   Exit

Transmission

- **Of 16 Oregon counties with contracts…**
  - **3 VPN**
  - **9 sFTP**
  - **2 testing**
  - **2 not using**

Transmission: County Side

- **Not fully automated, but few steps easily done**
  - **Run file extract**
  - **Place on server with VPN/sFTP connection**
  - **Receive e-mail confirming successful transmission**

Transmission: State Side

- **System fully automated**
- **Check each county directory for correctly-named file**
  - Incorrect: not processed + e-mail alert of problem
  - Correct: email confirmation to originating county (includes date)
- **Archive each correct file; copies moved to working upload directory**
- **Upload collected files into**
  - Master database
  - Data manager's reporting database
- **Extract new/updated records for import into Filemaker**
  - Archive & copy to shared directory for data entry staff
  - Notification email; import to Filemaker
- **Create tailored reports from reporting database**
  - Disease-specific notification of new/updated records
- **Refresh "mirror" MCCDD database from the server master**
  - 1 am; new data are ready each work day
- **Information at each step to process log file.**

PHIN & NEDSS Compliance

NEDSS Compatibility

- **Serves needs at local & state level**

- **Monitor and Assess disease trends**
  - **Inform public health policy**
    - e.g., crypto, outbreak summaries
  - **ID public health issues for research**
    - e.g., chronic Hep B

- **Protect confidential health info while allowing timely data sharing**

NEDSS Principles Applied

- **Off-the-shelf software**
    - MS Access

- **Internet-based secure transmission**
    - VPN or sFTP

- **Common reporting requirements**
    - Based on state Investigative Guidelines

Issues Addressed

- **Identified through NEDSS process**
- **Local data management needs**
  - MCHD: ~25% of reportable conditions in Oregon
- **Delayed data reporting**
  - VPN better then disks!
- **Multiple data systems (county/state)**
  - MCCDD, State FileMaker database, and CDC systems (e.g., NETSS)

PHIN Compliant Areas

- **Management of Possible Case, Contacts, and Threat Data**

- **Analysis and Visualization**

- **Automated Exchange of Data Between Public Health Partners**

Almost PHIN Compliant

- **Manual Data Entry for Event Detection and Management**
  - **Have, but not web-based**

- **Public Health Information Dissemination and Alerting**
  - **Passive sharing of information between state & county**
  - **State HAN initiative addresses need**

Related to Compliance

- **Public Health Information Dissemination and Alerting**
  - Passive state/county info sharing
- **IT Security & Critical Infrastructure Protection**
  - Data secured and backed-up

Not Targeted

- **Specimen and Lab Result Information Management and Exchange**

- **Directories of Public Health & Clinical Personnel**

Beyond Compatability

- **Additional Local Health Department needs addressed**
  - **Case management**
    - Locals responsible for implementing & tracking interventions
  - **Tracking workload in addition to cases**
    - Budgets & staffing

Lessons Learned

Requirements for System

- **Technical support on both ends**
  - **Programmers; VPN/server support**
- **Infrastructure**
- **Communications**
  - **Contracts (what's expected)**
  - **Inclusive workgroups (updates & standardization)**

Entering the Computer Age

- **Convincing frontline staff**
  - **Any system only as good as the data going in**
  - **"Nurses don't do data entry"**
    - The new world of charting
  - **Utility in everyday work essential**
- **When data entry seen as burdensome**
  - **Mix paper/faxed reports with electronically transmitted**
  - **Incomplete data as "Completed case" when investigation done**

Additional Features

- **Batch importing of case data**

- **Flexibility/Adaptability**
  - **Extracting/mapping existing info to meet situation specific needs**

Future Plans

- **Move MCCDD into SQL**

- **Web-based front-end?**
    - Improve use in the field
    - Facilitate data export for risk analysis

- **On-going improvements to processing & transmission on county side**